

AMENDMENTS TO THE CLAIMS

1 – 4. (Canceled)

5. (New) A ball screw mechanism for an electric power steering apparatus, comprising:

a ball nut having an outer circumference and an inner circumference, wherein the ball nut is fitted around a ball screw portion of a steering shaft;

the ball nut further including a screw groove formed on the inner circumference, a first circulating hole forming a passageway between the outer circumference and the inner circumference of the ball nut, and a second circulating hole forming another passageway between the outer circumference and the inner circumference of the ball nut;

a ball screw track in communication with the ball nut inner circumference, having respective opposing ends at the first circulating hole and the second circulating hole, is formed by the engagement of the screw groove and the ball screw portion of the steering shaft, wherein balls travel in the ball screw track;

a circulator having a first opening and a second opening, the first opening of the circulator attached to the outer circumference of the ball nut approximating the first circulating hole, and the second opening of the circulator attached to the outer circumference of the ball nut approximating the second circulating hole, wherein the circulator guides the balls from the first circulating hole to the second circulating hole; and

a step in the screw groove adjacent to at least one of the first circulating hole and the second circulating hole, wherein the step is a change in depth of the screw groove at at least one of the respective opposing ends of the ball screw track.

6. (New) The ball screw mechanism of claim 5, wherein the step is formed by making the depth of the screw groove within the ball screw track deeper than the depth of the screw groove outside the ball screw track.

7. (New) The ball screw mechanism of claim 5, the circulating holes further comprising an opening edge within the ball screw track, wherein the step adjacent to at least one of the circulating holes is formed by a deeper screw groove at the opening edge of the circulating hole compared to the edge of the circulating hole not within the opening edge.

8. (New) A ball screw mechanism for an electric power steering apparatus, comprising:

a ball nut having an outer circumference and an inner circumference, wherein the ball nut is fitted around a ball screw portion of a steering shaft;

the ball nut further including a screw groove formed on the inner circumference, a first circulating hole forming a passageway between the outer circumference and the inner circumference of the ball nut, and a second circulating hole forming another passageway between the outer circumference and the inner circumference of the ball nut;

a ball screw track in communication with the ball nut inner circumference, having respective opposing ends at the first circulating hole and the second circulating hole, is formed by the engagement of the screw groove and the ball screw portion of the steering shaft, wherein balls travel in the ball screw track;

a circulator having a first opening and a second opening, the first opening of the circulator attached to the outer circumference of the ball nut approximating the first circulating hole, and the second opening of the circulator attached to the outer circumference of the ball nut approximating the second circulating hole, wherein the circulator guides the balls from the first circulating hole to the second circulating hole; and

the screw groove having a third circulating hole, forming a passageway between the outer circumference and the inner circumference of the ball nut, wherein the third circulating hole is outside the ball screw track.